MK-30-DC

User's Manual
Manual de Usuario

PN: 430064003 REV A

Introduction

New MK-30-DC DC measuring unit has been designed in order to offer a wide range of features in a small size device.

An input for measuring up to 800Vdc, and another input for measuring directly current up to 30A are available. Using these 2 signals, the unit calculates the instant power, and by integrating that value, it obtains the energy.

The unit has, as well, an energy pulses output, which parameters are fully configurable.

In case of auxiliary power shutdown, the unit stores in internal memory the values of energy, and the peak and valley of all parameters. The unit is based on a system that doesn´t need a battery, and, therfore, is maintenance free.

MK -30-DC series of devices has been tested in laboratory according to up-to-date regulations and directives, and tested on industrial environments, passing succesfully the most severe environment conditions tests, conducted electrical noise, radiated electromagnetic perturbances, vibrtations, etc.

Safety Instructions

This instrument has been designed and tested according IEC61010 standard. Safety requirements for electrical equipment for measurement.

⚠ Symbol in the instrument indicates that the user must read the relevant section of this instruction manual for a safe operation of the instrument.

⚠ **WARNING is reserved to conditions and actions that can cause damage or injury.**

⚠ WARNING

- **Before using the instrument, read carefully and understand operating instructions included in this manual.**
- **Keep this manual for further reference.**
- **Make sure to use this instrument only under the conditions and for the applications that was designed for.**
- Before any maintenance operation, wiring modification, repair, etc. instrument must be unplugged from all possible power supplies. Equipment must be put out of service if there is a possible operating, protection or insulation faiure.

Technical features

Auxiliary supply

Nominal value:	115Vca or 230Vac (+/- 10%)
Frequency:	40 to 70Hz
Power:	4VA

Measurement circuitry

Measurement by microcontroller.	
Refresh rate :	1 reading/s.
Voltage accuracy:	+/- 0.5% FS +/- 1 digit
Current accuracy:	+/- 0.5% FS +/- 1 digit
Power accuracy:	+/- 1% FS +/- 1 digit

Display

Display:	4 digits, 7 segments
Colour :	Red, high efficiency
Aux. led:	4

Environment conditions

Storage temperature:	-40ºC … +70ºC
Operating temperature:	0ºC … 65ºC

Pulse Output

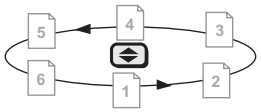
Output type:	optoinsulated transistor
Pulse duration:	Ton=240msec
Isolation:	500V dc (10^{10} ohm)

Standard

IEC 1010, IEC 348, IEC 664, EN 50081-1, EN 50082-1
IEC/EN 62053-31

Display

MK-30_DC unit displays all parameters using 6 pages



Voltage

Display range:
-800 V … 800 V

Current

Display range:
-30.0 A … + 30.0 A

Power

Display of Power is done in kW, with automatic decimal point placement.
Display range:
-0.01 … 9999 kW
If the voltage is negative it display *ERR*

Energy is displayed using 3 counters:

Counter A: from 0 to 999W.h

Counter B: from 0 to 999 KW.h

Counter C: from 0 to 999 MW.h

Example: If the values of counters are: A: 293, B: 100, C: 48 total of Wh supplied are: 48,100,293 Wh.

If, when displaying a counter, top counters leds are blinking, it indicates that the value is not 0.

If the power is negative it does not accumulate energy nor it generates pulses.

Programming

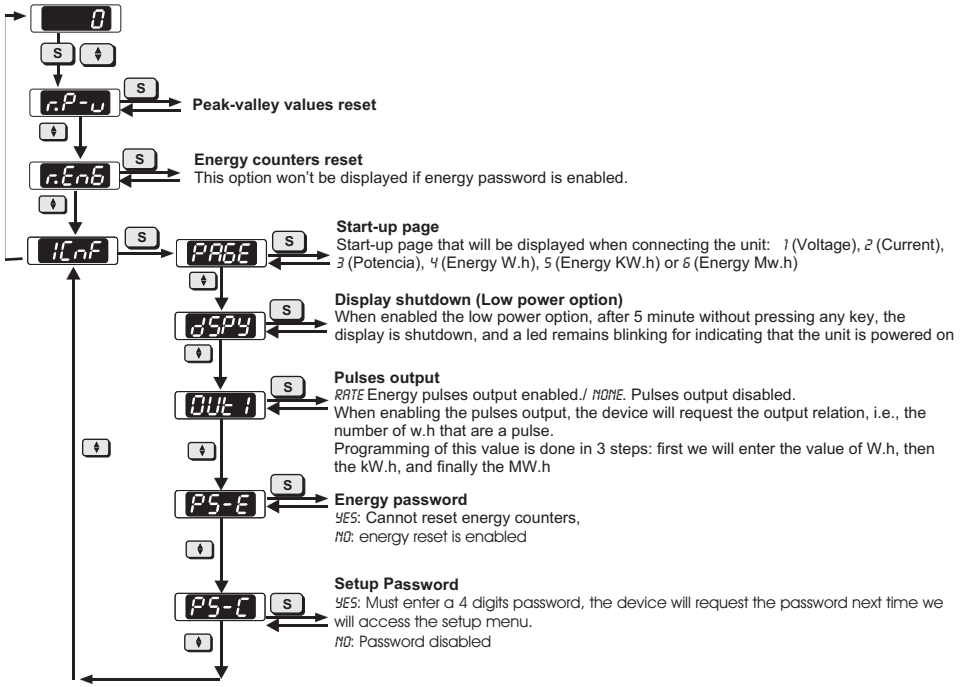
S + ▲▼ Pressing both keys, we enter in the reset and set-up menu of the unit.

Navigation:

▲▼ Step right a position through the tree, and validate a value..

S Step down a position in the tree.

Entering a value:
For changing the digit, press **S**
For modifying the value of the selected digit press ▲▼ repeatedly


0
S
▲▼
rP-U
Peak-valley values reset
rEnG
Energy counters reset
This option won't be displayed if energy password is enabled.
ICnF
PASE
Start-up page
Start-up page that will be displayed when connecting the unit: 1 (Voltage), 2 (Current), 3 (Potencia), 4 (Energy W.h), 5 (Energy KW.h) or 6 (Energy Mw.h)
dSPY
Display shutdown (Low power option)
When enabled the low power option, after 5 minute without pressing any key, the display is shutdown, and a led remains blinking for indicating that the unit is powered on
OUt 1
Pulses output
RATE Energy pulses output enabled./ NONE. Pulses output disabled.
When enabling the pulses output, the device will request the output relation, i.e., the number of w.h that are a pulse.
Programming of this value is done in 3 steps: first we will enter the value of W.h, then the kW.h, and finally the MW.h
PS-E
Energy password
YES: Cannot reset energy counters,
NO: energy reset is enabled
PS-C
Setup Password
YES: Must enter a 4 digits password, the device will request the password next time we will access the setup menu.
NO: Password disabled

Keyboard functions

We can move and perform several actions across the different pages

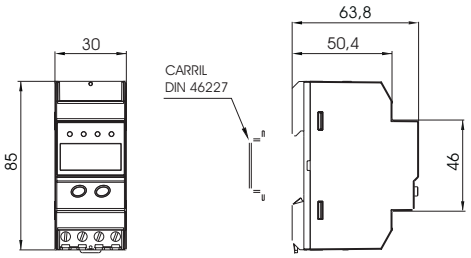
▲▼ Next page

S Display Peak-Valley values of the current page parameter. (Only available in Voltage, Current and Power).

S + ▲▼

Pressign both keys, we can reset the peak-valley values, energy counters, and enter the unit setup menu

Dimensions and mechanical data



Size: 30 x 85 x 63,8
Weight: 170 gr.
Case material: auto extinguish ABS
Case colour: RAL 7035
Front:: IP54 (IP65 optional)

Connection diagram